

Application No.: 10/685,261  
Amendment Dated: March 25, 2005  
Reply to Office Action of: January 25, 2005

END920000181US2

**Remarks/Arguments:****Amendments**

Claims 17, 24, 38, and 39 have been canceled. Claim 18 has been rewritten in independent form, incorporating all the limitations of independent claim 17, on which it directly depended. Claim 22 has been amended to change dependency so it does not depend on a canceled claim. Independent claim 37 has been rewritten in dependent form to depend on claim 21. It is submitted that no new matter is introduced by these amendments.

It is submitted that these amendments do not introduce any new questions of patentability. Entry of this amendment is respectfully requested.

**First Rejection under 35 USC 102(e)**

Claims 36-39 were rejected as anticipated by Berger, U.S. Patent 6,528,145. Claims 38 and 39 have been cancelled. Claim 37 has been rewritten in dependent form to depend on claim 22.

The rejection of claim 36 appears to be an error. Claim 36 depends on claim 20, which depends on claim 18, which depended on now cancelled claim 17. The rejection of claims 17-24 as anticipated by Berger was withdrawn in the last communication. How a reference can anticipate a dependent claim without also anticipating the claims on which it depends is not readily apparent. The Examiner is respectfully requested to clarify the rejection of claim 36 as anticipated by Berger in the next communication.

**Second Rejection under 35 USC 102(e)**

Claims 17-24 and 35-39 were rejected under 35 USC 102(e) as being anticipated by Vargo, U.S. Patent 6,232,386. Claims 17, 24, 38, and 39 have been cancelled. With respect to remaining claims, claims 18-23, 36, and 37, this rejection is respectfully traversed.

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The Office asserts that Vargo teaches a composite structure comprising a polymer layer **46** coated with a metal oxide layer **47**, which in turn is bonded to another polymeric layer **48**. Office Action of 1/25/05, page 3, lines 7-15.

The Office relies on Figure 3 and column 35, lines 57-63, and column 36, lines 1-17. The passage relied on by the Office reads as follows:

The composites of the present invention serve particularly well as substrates for bonding conducting or semiconducting materials (e.g., metals, metal oxides, metal nitrides, metal carbides, metal borides, polyacetylenes, polythiophenes, and polypyrroles), other polymers (e.g., polyurethanes, polyimides, polyamides, polyphosphazenes, halopolymers, polyolefins, polyacrylates, and polyesters), biological materials (e.g., proteins, enzymes, nucleotides, antibodies, and antigens), and phosphorescent and fluorescent molecules commonly used in sensors and electroluminescent or liquid crystal based displays. This is illustrated in FIGS. 3 and 4.

For example, in FIG. 3, halopolymer 42 is surface treated so that oxygen atoms or oxygen-containing radicals (designated X) **43** are bonded to surface **44**, thus producing oxyhalopolymer **45**. Oxyhalopolymer **45** is then infused with an organic or inorganic material to produce oxyhalopolymer composite 46. During the Infusion process, layer 47 (from about 1 nm to about 1 mm thick) of pure conducting or semiconducting material (e.g., metal, metal oxide, metal nitride, metal carbide, metal boride, polyacetylenes, polythiophene, and polypyrrole) is disposed on surface **44**. Layer **47** of oxyhalopolymer composite 46 is then reacted with material (designated Y) **48** (e.g., conducting or semiconducting materials, other polymers, biological materials, and phosphorescent and fluorescent molecules commonly used in sensors and electroluminescent or liquid crystal based displays) so that material (designated Y) **48** is bonded to layer **47** of oxyhalopolymer composite 46.

Vargo, column 35, line 57, to column 36, line 17 (emphasis added).

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1. *Layer 46 Cannot be a Polyimide Layer Because Polyimides are Defined as "Non-Halopolymers"*

The Office asserts that Vargo teaches the polymers in layer 46 and 48 to be polyimides, polysiloxanes, polyalkyenes, or polyurethanes. With respect to layer 46 in Figure 3, this assertion is respectfully traversed. Layer 46 corresponds to applicants' polymeric layer.

Claim 18, the only independent claim remaining in the application recites that the polymeric layer includes a first polymeric material, which is a polyimide. Therefore, the question is whether Vargo discloses whether layer 46 can be a polyimide.

As is apparent from the passage above, layer 46 is expressly described as an "oxyhalopolymer composite 46." As is also apparent from this passage above, oxyhalopolymer composite 46 is produced oxidation of halopolymer 42 to produce oxyhalopolymer 45, followed by infusion of an organic or inorganic material to produce oxyhalopolymer composite 46.

Halopolymers are described at column 7, lines 6-42. Polyimides are not listed as halopolymers.

The Office relies on column 7, lines 53-65, and column 35, lines 57-63, of Vargo. Column 7, lines 53-65, presents a list of "suitable organic non-halopolymers" which includes polyimides. "Non-halo polymers" are defined as polymeric bulk materials other than halopolymers. Vargo, column 6, lines 13-14 (emphasis added). Thus, Vargo has defined halopolymers and non-halopolymers as two distinct, non-overlapping groups of polymers.

As noted above, layer 42, the precursor of layer 46, is expressly described as a halopolymer. By classifying polyimides as "non-halopolymers," Vargo has clearly excluded polyimides from layer 42. Thus, instead of supporting the Office assertion, column 7, lines 53-65, make it apparent that polyimides are not included in layer 42 and, consequently, in resulting layer 46.

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Column 35, lines 57-63, lists material that can be bonded using the composite of the invention. This disclosure corresponds to the materials that can be present in layer 48, which corresponds to applicants' added layer. Polyimides are included, but polyepoxides, as recited in claims 20, 21, 36, and 37, are not included in this disclosure.

2. *Layer 47 Cannot Be Silicon Oxide Because Silicon Oxide Is an Insulator*

The Office asserts that Vargo teaches the metal oxide to be a network of silicon dioxide or a pure metal oxide layer. With respect to layer 47 in Figure 3, this assertion is respectfully traversed.

As indicated above, layer 47 is expressly described as a pure conducting or semiconducting material. As is well known to those skilled in the art, silicon dioxide is an insulator. Therefore, the general description "metal, metal oxide, metal nitride, metal carbide, metal boride, polyacetylenes, polythiophene, and polypyrrole" can not include silicon oxide because this group is expressly limited to "pure conducting and semiconducting materials." Layer 47 cannot be silicon oxide because silicon oxide is not a conducting or semiconducting material.

The Office relies on column 5, lines 52-58, and column 14, lines 16-30, of Vargo for support for its assertion that layer 47 can be a silicon oxide. Column 5, lines 52-58 describes "infused inorganic materials," but says nothing about silicon oxide. Column 14, lines 16-30, discusses macromolecular networks, including the silica structure. However, mention of silica macromolecular networks elsewhere in the specification cannot overcome Vargo's express statement that layer 47 is a pure conducting or semiconducting material, which excludes silicon oxide.

3. *Summary*

As discussed above, claim 18 and the claims dependent thereon differ from the disclosure of Vargo in at least the following respects:

1. Layer 46 cannot be a polyimide layer because polyimides are excluded from the definition of halopolymers.

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2. Layer 47 cannot be a silicon oxide because layer 47 is expressly described as a pure conducting or semiconducting material and silicon oxide is an insulator.

Anticipation requires that each and every limitation of the claim be disclosed, either expressly or under principles of inherency, in a single prior art reference. *In re Robertson*, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); See, also MPEP § 2131. Absence from the reference of any claimed limitation negates anticipation. *Rowe v. Dror*, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997).

As described above, at least two of the limitations of applicants' claims are missing from the disclosure of Vargo. Therefore, the rejection of claims 18-23, 36, and 37 as anticipated by Vargo should be withdrawn.

#### Conclusion

It is respectfully submitted that the claims are in condition for immediate allowance and a notice to this effect is earnestly solicited. The Examiner is invited to phone applicants' attorney if it is believed that a telephonic or personal interview would expedite prosecution of the application.

Respectfully submitted,

  
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The Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. 09-0457 (International Business Machines Corporation) of any fees associated with this communication.

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office (703-872-9306) on the date shown below.

March 25, 2005

  
Deborah A. Spratt

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